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ENERGY AND THE ENVIRONMENT (EE)

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AUTHOR INDEX

B

Belkin, N. L., Clean Room Technology and Aseptic Practices in the Surgical Suite, No. 3, p. 30. *Although the air in the surgical suite may be grossly contaminated as compared with that of the clean room, the infection (rejection) rate is far less than that experienced by industry. The question arises as to the benefits that industry could derive from the application of the surgical community's principles and practices of aseptic technique.* (CC Clean Room Design/Materials, Garments and Wipes, Criteria and Standards)
Blinde, D. R., The Room Air Ionization System-A Better Alternative Than 40% Relative Humidity, No. 2, p. 54. *(Abstract—see Mykkanen, C. F.)*
Bremerman, M. V., Reliability Growth Theory Assumption-Revisited, No. 1, p. 15. *(Abstract—see Chenoweth, H. B.)*

C

Caruso, H., The Role of Professional Societies in the Standardization Process—A Case History, No. 2, p. 42. *Examines the role of professional societies in the development of government standards. Case histories based on experiences of the Institute of Environmental Sciences are cited involving MIL-STD-810 and FED-STD-209. Benefits from professional society involvement are shown to include an expanded experience base, "free" consulting services, reduced political concerns, increased technical emphasis, and improved trust between parties.* (DTE Criteria and Standards, PR Acquisition Policies, Criteria and Standards)
Caruso, H., Tailoring Issues for the Program Manager, No. 2, p. 52. *(Abstract—see Schafer, H.)*
Chenoweth, H. B., Reliability Growth Theory Assumption—Revisited, No. 1, p. 15. *Statistically analyzes the pretest, entry level, initial MTBF parameters and slopes of reliability growth tests for 65 ground and airborne radars. The resultant distributions closely approximate a bifuricated lognormal for the initial MTBF and truncated normal distribution for the slope, respectively. Concentrates on determining the overall lognormal distribution of the initial MTBF and the need for a realistic reliability design and growth management tool in program development terms.* (PR Reliability Statistics)
Choi, Y. H., Low-Level Radioactive Waste Management: Federal-State Cooperation or Confusion? No. 4, p. 41. *Describes and analyzes the legislative history of the Low-Level Radioactive Waste Policy Act of 1980 and discusses major issues and problems resulting from the implementation of the Act.* (EE Environmental Planning, Solid and Hazardous Waste Management)

D

Daniel, S. W., Particle Contamination in the Clean Room, No. 1, p. 37; No. 2, p. 48. *(Abstract—see Hoenig, S.)*
Danna, R., Recertification Analysis and Inspection Planning for Environmental Test Facilities, No. 3, p. 33. *(Abstract—see Rebeck, K. J.)*

E

Edwards, A. A., Fatigue Induced Cracking in Aluminum LN_2 Shroud of 39-Foot Vacuum Chamber, No. 6, p. 33. *Delineates the steps involved in a thorough analysis of the cause of leakage in interconnecting pipes for an LN_2 space background shroud in a 14-year old 39-foot space simulation chamber. Investigation of failures, data gathering, planning for repairs, steady state and transient movement analysis, heat transfer calculations and corrective action are covered in detail. The recommendations given for construction of future space chambers are noteworthy.* (DTE Solar and Space Simulation)
Engleman, D. S., Evaluation of a Laser Spectrometer ULPA Filter Test System, No. 5, p. 31. *(Abstract—see Rivers, R. D.)*

F

Frey, A. H., Change in Room Aerosol Concentration by In-Duct Complex Electric Fields, No. 1, p. 34. *Discusses tests designed to determine if tobacco smoke particulates in room air would be influenced by passing the air through a complex high frequency, high voltage electric field located in the supply duct. Particle mass and light scattering in the room was measured. The statistical analyses of the data indicated that the electric field had a substantial effect on respirable aerosol concentration in the room. Differences between electric field on vs. off conditions were statistically significant at the .001 level.* (CC Clean Room Design/Materials, Filters and Filtration)
Frith, C. F., State-of-the-Art for Electronic Grade Ultrapure Water Manufacturing and Distribution, Part I,

No. 4, p. 22; Part II, No. 5, p. 37. *Surveys standards and requirements related to water analysis, supply, pre- and primary treatment, polishing, storage, and reclamation. New concepts are also discussed.* (CC Sources and Effects, Criteria and Standards)

G

Gunawardena, S., The Challenge to Control Contamination: A Novel Technique for the IC Process, No. 3, p. 23. *(Abstract—see Kaempf, U.)*

H

Haven, R., The Challenge to Control Contamination: A Novel Technique for the IC Process, No. 3, p. 23. *(Abstract—see Kaempf, U.)*

Hobbs, G. K., Six Degree of Freedom Vibration Stress Screening, No. 6, p. 46. *Quasi-random triaxial vibration systems, including temperature cycling capability, have been successfully used for locating defects. Some defects that have shown up during screening could not be found in the rework cycle under quiescent conditions nor could they be located using a single-axis vibration system in conjunction with thermal cycling. Investigations of the motions in the time and frequency domains were undertaken, including the relationships between the three linear axes and between the three rotational axes. These investigations showed that the six axes of motion can be considered to be independent in terms of specimen response to the input motions. Questions and answers are included.* (DTE Shock and Vibration, PR Acquisition Policies, Stress Screening)

Hoenig, S., Particle Contamination in the Clean Room, No. 1, p. 37. *A number of technologies have been investigated that might be used to reduce particulate contamination in the clean room. These include plastic wafer storage boxes for semiconductor wafers, free-standing dust collectors for clean room equipment maintenance, and airflow improvement in laminar flow cabinets.* (CC Clean Room Design/Materials, Filters and Filtration)

Hoenig, S., Particle Contamination in the Clean Room, No. 2, p. 48. *Investigates a number of technologies to reduce particulate contamination in the clean room including protection of garments between wearings, small scale clean air systems for localized wafer protection, contamination associated with beards and cosmetics, dust generation from human hands with or without gloves, dust generation by unpainted wood surfaces, particulate generation by smokers vs. nonsmokers, and detergent compounds for clean room applications.* (CC Garments and Wipes, Sources and Effects, Filters and Filtration)

Hollingsworth, R. T., Recertification Analysis and Inspection Planning for Environmental Test Facilities, No. 3, p. 33. *(Abstract—see Rebeck, K. J.)*

Holmgren, G. R., Simulation and Testing Techniques for Mechanical Shock and Vibration Environments, No. 5, p. 24. *Describes methods of analysis and evaluation and for simulation of measured shock and vibration stresses on the basis of measured acceleration data. Examples of applications from 57 mm ammunition, battle tank 103 and anti-tank missile RBS 56 BILL are given.* (DTE Shock and Vibration, Test Tailoring)

I

Idso, S. B., The Case for Carbon Dioxide, No. 3, p. 19. *A careful analysis of the CO_2 "greenhouse effect" reveals it to be a theory without substance, leading to predictions which are exactly the opposite of what is observed in nature. Literally hundreds of sound agronomic experiments conducted over the past several decades have established that atmospheric CO_2 enrichment will be a great boon to agriculture, allowing tremendously increased yields to be produced with but a fraction of the water which is currently required.* (EE Air Quality Impact, Environmental Planning, Energy Production/Use)

K

Kaempf, U., The Challenge to Control Contamination: A Novel Technique for the IC Process, No. 3, p. 23. *Describes a new concept that has been designed that separates the wafers from the operator environment, while the important interaction between personnel and process can be maintained. This new wafer handling system is based on small, enclosed spaces with interface ports to transfer wafers between carrying boxes and process equipment.* (CC Clean Room Design/Materials, Sources and Effects)

Kittel, J. H., Nuclear Waste Management-Issues and Progress, No. 2, p. 34. *Discusses progress and institutional issues that surround the management of spent nuclear fuel and the principal types of nuclear waste. Legislation is described that has been enacted to facilitate difficult political decisions on how waste disposal sites are to be selected. Summarizes emerging technology for converting valuable nuclear waste byproducts to useful purposes such as food preservation.* (EE Environmental Planning, Solid and Hazardous Waste Management)

Koch, W. H., Design and Test Pitfalls in Loss Control, No. 1, p. 21. *Examines Product Liability Loss Control as it relates to the design and testing functions. Includes the issues of defective vs. conforming products, state-of-the-art deficiencies, design qualification testing, and test reports. Quality control records, engineering design changes, replacement part warnings, rework, and field complaints are also discussed. Suggestions are made regarding means to reduce risk of liability in these areas.* (DTE Criteria and Standards, PR Acquisition Policies)

Kwan, S. C., Precision Cleaning of Large Complex Structures, No. 4, p. 27. *Discusses the results of solvent wipe precision cleaning method with inexperienced personnel to achieve MIL-STD-1246A particulate contamination levels on large complex structures.* (CC Sources and Effects, Training and Education, Clean Room Design/Materials)

L

Lalanne, C., Maximax Response and Fatigue Damage Spectra—Part I, No. 4, p. 35; Part II, No. 5, p. 40. *Defines criteria of extreme-response and fatigue-damage spectra comparing the severity of several vibration or shocks and elaborating simple specifications, possibly of reduced duration, of the same severity as a complex vibratory environment made up of vibrations of various origins.* (DTE Shock and Vibration, Criteria and Standards)

M

Maag, C., Maintenance of Contamination Sensitive Surfaces on Board Long-Term Space Vehicles, No. 4, p. 19. *(Abstract—see Phillips, A.)*

Mason, K. D., Precision Cleaning of Large Complex Structures, No. 4, p. 27. *(Abstract—see Kwan, S. C.)*

Meeker, B., A Test-to-Cost Scheme for Missile Lot Acceptance, Part I, No. 1, p. 27; Part II, No. 3, p. 40. *(Abstract—see Ogden, S.)*

Miller, G. S., Recertification Analysis and Inspection Planning for Environmental Test Facilities, No. 3, p. 33. *(Abstract—see Rebeck, K. J.)*

Mykkanen, C. F., The Room Air Ionization System-A Better Alternative Than 40% Relative Humidity, No. 2, p. 54. *Presents testing and evaluation results for the system including EMI effects, ozone measurements, charge decay rates of materials, system controls and safety features, and effects of ions on personnel.* (CC Clean Room Design/Materials, Identification and Measurement)

N

Nycum, C. W., In-Line Environmental Test Facilities for the DIVADS Radar, No. 2, p. 45. *Describes development of an advanced In-Line Environmental and Burn-In facility for screening the DIVADS Radar. New acquisition of military systems typically requires sophisticated high volume environmental stress screening. Special emphasis is placed on human engineering, space conservation, low-frequency taped random vibration, trouble-shooting under stress, and efficient temperature cycling.* (DTE Climatics and Thermal, Shock and Vibration; PR Stress Screening)

O

Ogden, S., A Test-to-Cost-Scheme for Missile Lot Acceptance, Part I, No. 2, p. 27; Part II, No. 3, p. 40. *Presents a method to reduce the cost of lot acceptance testing. The test-to-cost (TTC) scheme works from a fixed test plan and within an annual cost constraint. It reduces cost by reducing both the scope and frequency of testing using a dynamic decision process. An example of the TTC scheme is presented and its efficiency is evaluated using a Monte Carlo method.* (DTE Test Tailoring, PR Acquisition Policies, Reliability Statistics)

P

Palgard, S. E., Environmental Engineering at Saab-Scania Aircraft Division, No. 6, p. 43. *Describes how the environmental engineering activities can be organized in an aerospace company. Two technical solutions of problems, namely gunfire vibration and cabin noise in propeller aircraft, are presented.* (DTE Test Tailoring, Acoustics, Shock and Vibration, Criteria and Standards)

Parikh, M., The Challenge to Control Contamination: A Novel Technique for the IC Process, No. 3, p. 23. *(Abstract—see Kaempf, U.)*

Patterson, D., The Payoff of Tailoring for the Navy, No. 4, p. 33. *The Naval Material Command continues to encourage those involved in the procurement process to use appropriate and realistic technical requirements that correspond to a system's or equipment's intended use environment. General or non-specific technical specifications cannot provide requirements that consider all the unique aspects of particular situations. General specifications must be tailored into realistic technical requirements that fully address the intended operating conditions and environments.* (DTE Test Tailoring, PR Acquisition Policies)

Phillips, A., Maintenance of Contamination Sensitive Surfaces on Board Long-Term Space Vehicles, No. 4, p. 19. *Covers a brief background of spacecraft contamination; the means available to us through use of current technology, such as retractable covers, gaseous purges, on-orbit maintenance; and cleaning/prevention methods such as atomic oxygen, wake shield, etc., which have not been examined for their full potential.* (CC Sources and Effects)

R

Rebeck, K. J., Recertification Analysis and Inspection Planning for Environmental Test Facilities, No. 3, p. 33. *Presents the steps used in the development program for the recertification of pressure and vacuum vessels and provides samples to illustrate typical problem areas encountered during implementation of this program for environmental simulators. Examples of efficient analysis techniques that can be used to address structural concerns are presented. The longer term inservice inspection plan for the facility is also described.* (DTE Criteria and Standards, Solar and Space Simulation)

Rivers, R. D., Evaluation of a Laser Spectrometer ULPA Filter Test System, No. 5, p. 31. *Reports on practical arrangements for production testing of HEPA filters in the low-penetration range using Laser aersol spectrometers. Criteria are given for calibration, sampling and counting procedures needed to obtain statistically valid penetration results. Microcomputer data reduction programs to implement these criteria are described.* (CC Identification and Measurement, Filters and Filtration)

S

Schafer, H., Tailoring Issues for the Program Manager, No. 2, p. 52. *Presents a check list for use by program managers in determining the value of the various components in an environmental test plan. Emphasis is placed on implementing the tailoring approach required by MIL-STD-810D. Questions include test environment correlation with service environment likelihood of equipment exposure to field environments, and technical audit trails for test criteria.* (DTE Test Tailoring, PR Acquisition Policies)

Schafer, H., The Politics of Environmental Test Engineering: Giving Hardware Acquisition Programs the Right Answers, No. 5, p. 28. *Describes the proper relation of the environmental engineer to the military hardware procurement process. The value of the early involvement of the environmental engineer to the program manager is also described and real-world examples are presented.* (DTE Test Tailoring, PR Acquisition Policies)

Schroeder, H. G., Evaluation of Bacterial Grow Through, No. 6, p. 27. *(Abstract—see Simonetti, J. A.)*

Silver, W., In-line Environmental Test Facilities for the DIVARDS Radar, No. 2, p. 45. *(Abstract-see Nycum, C. W.)*

Simonetti, J. A., Evaluation of Bacterial Grow Through, No. 6, p. 27. *A variety of different commercially available submicron rated membrane filter cartridges were innoculated with a known number of viable cells and placed in service on a simulated D.I. water point of use. Pseudomonas diminuta was selected as the model organism. The effluent was monitored for cell count as a function of time under continuous as well as intermittent usage. Since the downstream bacterial counts varied considerably for the cartridges tested, laboratory experiments were conducted to obtain insight into the possible mechanisms which may be associated with the proliferation of bacteria through various types of membrane materials.* (CC Filters and Filtration, Identification and Measurement)

Smith, V. C., Pharmacopeia Requirements and Water Standards in the United States of America, No. 6, p. 21. *Surveys water purification methods, test procedures, grades and distribution systems. Purification methods include distillation, demineralization, reverse osmosis, ultrafiltration, membrane filtration, adsorbants and prefiltration. Pyrogen detection using "rabbit" and Limulus Amebocite Lysate tests is highlighted. Water grades for injection, inhalation, and irrigation are summarized.* (CC Criteria and Standards, Filters and Filtration, Identification and Measurement; EE Water Quality Impact)

Spann, F., Component Vibration Environment Predictor, No 5, p. 19. *Presents a vibration prediction method requiring only a general description of the hardware design. The method described provides a reasonable estimate of acoustically-excited component vibration environments when only the area exposed to the acoustic environment and weight are known. The use of the method followed by a brief theoretical background, evaluation of prediction accuracy, and a description of a vibration predictor computer program are presented.* (DTE Shock and Vibration, Acoustics)

T

Tomer, R. S., Precision Cleaning of Large Complex Structures, No. 4, p. 27. *(Abstract—see Kwan, S. C.)*

Tullis, B., The Challenge to Control Contamination: A Novel Technique for the IC Process, No. 3, p. 23. *(Abstract—see Kaempf, U.)*

V

Vietor, J., The Challenge to Control Contamination: A Novel Technique for the IC Process, No. 3, p. 23. *(Abstract—see Kaempf, U.)*

W

Wagner, J. F., Development of an Environmental Stress Indicator for Airborne Avionics Equipment, No. 4, p. 31. *The PRAM Program Office at Wright-Patterson AFB is conducting a program to evaluate the concept of an environmental stress indicator that measures and records stresses induced on avionics equipment. Sensors that measure temperature, humidity, shock, and vibration were selected and packaged into a single indicator. The indicator measures and records environmental stresses imposed on avionics equipment. This information can be used to help determine the reason for equipment failure which will assist in selecting the proper corrective action.* (DTE Climatics and Thermal, Shock and Vibration)

Y

Yeager, K., A Multi-Regional Option for the Acid Rain Issue, No. 2, p. 60. *An accelerated national R&D effort is needed to resolve the uncertainties surrounding the environmental risks of acid rain and proposed elimination strategies. This would avoid arbitrary controls actions which force us to "freeze" unnecessarily expensive and inefficient "band-aid" solutions into today's plants. New technologies such as fluidized-bed combustion and coal conversion can resolve the conflicts between coal and the environment, while improving productivity. Improving the efficiency, reliability and environmental performance of coal utilization requires a more constructive and coordinated partnership between government and the private sector. The rate of application of these technological improvements depends on regulatory and financial incentives which today are largely missing.* (EE Air Quality Impact, Energy Production/Use, Environmental Planning) ■